

## Appendix A

# Data Definitions and Methodology

The data presented in this report are extracted from detailed case studies of recycling and composting programs in 30 U.S. communities. These case studies are published in three volumes by the Institute for Local Self-Reliance as *In-Depth Studies of Recycling and Composting Programs: Designs, Costs, Results*. Each case study presents detailed information on each community's demographics, annual solid waste generation and recovery, recycling and composting activities in the residential and commercial and institutional sectors, annual amount and breakdown of materials recovered, education and publicity, collection and processing equipment and costs, operating and maintenance costs, and future solid waste management plans.

Communities may define the terms and calculate the amounts of waste and recycling in various ways. To facilitate comparison among programs, we have utilized a uniform methodology wherever possible to determine residential and commercial/institutional waste, municipal solid waste, and total waste generation and recovery levels. See definitions given below. While this report goes to great length to ensure uniform comparisons, in some cases due to the realities of communities' data keeping such comparisons are not possible. Appendix C briefly details for each community any assumptions made to calculate waste generation and recovery rates. *In-Depth Studies of Recycling and Composting Programs* provides more detailed information.

Cost data presented in tables reflect the costs incurred by the jurisdiction documented and do not necessarily include all the costs incurred for recycling and composting operations. In many cases, for example, the private sector undertakes recovery activities independent of the public sector. All capital cost data have been converted into constant 1990 dollars using producer price indices, except where otherwise indicated.

The following definitions apply to this report only and are not meant to represent industry-wide definitions.

**Annualized Capital Costs** — capital costs have been converted to annual costs by assuming a 7-year amortization period for collection equipment and a 10-year amortization period for processing equipment. In most of the communities, equipment was paid in full at the time of purchase; thus in these we have used no interest rate. For the few communities that did finance their equipment, we have used their actual interest rates and pay-back periods. See Table 8.3 notes.

**Base Year of Study** — the 12-month period over which tonnage, cost, and other program characteristic data apply. Tonnage and cost data are reported on an annual basis and are largely for fiscal year or calendar year 1990, except where noted otherwise in tables. For example, see Table 1.1. In some cases, recent changes in program design and operations are noted in table footnotes.

**Co-Collection** — curbside collection of refuse and source-separated recyclables simultaneously in the same vehicles. See side bar, pages 138-139.

**Collection Capital Costs** — costs of acquiring equipment used to collect recyclable or compostable materials. If equipment predated the program, its cost is excluded.

**Commercial/Institutional Waste Recovered, Disposed, and Generated** — the annual tonnage of waste recovered, disposed, and generated by the commercial and institutional sectors (excluding medical wastes). The commercial sector includes theaters, retail establishments, hotels, and restaurants. The institutional sector includes hospitals and schools.

**Commingled Collection** — collection programs in which residents are required to place glass, metal and plastic containers in a single receptacle.

**Composted Waste** — discarded organic materials processed into a soil amendment, fertilizer, and/or mulch.

**Composting** — recovering discarded organic materials for processing into a soil amendment, fertilizer, and/or mulch.

**Composting Rate** — the tonnage of source-separated organic materials collected for composting divided by the tonnage of waste generated (waste composted, recycled, plus disposed). West Palm Beach's composting rate excludes noncompostable residue materials collected in yard waste collection routes.

**Construction and Demolition (C&D) Debris Recovered, Disposed, and Generated** — the annual tonnage of waste recovered, disposed, and generated as a result of construction and demolition activities. This waste may include concrete, asphalt, tree stumps and other wood wastes, metal, and bricks. (While C&D waste often burdens municipal solid waste collection and disposal systems, the U.S. EPA and the National Recycling Coalition exclude C&D debris from the definition of municipal solid waste.)

**Deposit Containers Recycled** — the annual tonnage of beverage containers recycled as a result of state or local bottle bills.

**Disposed Waste** — waste landfilled or incinerated.

**Generated Waste** — sum of waste recovered and waste disposed.

**Grasscycling** — leaving grass clippings on mowed lawns in order to avoid collection and disposal of this organic material.

**Intermediate Processing** — preparing collected recyclable materials for end-use manufacturing. Processing typically includes sorting, contaminant removal, and crushing or baling.

**Mandatory** — whether citizens are required to source-separate materials for recycling. In several communities, citizens may be required to set out certain materials at curbside for recycling. In others it may simply be illegal to set these out with refuse. Not all materials collected are designated as mandatory.

**Municipal Solid Waste (MSW) Recovered, Disposed, and Generated** — sum of residential and commercial/institutional wastes recovered, disposed, and generated. In some cases, MSW also includes deposit containers recovered, yard waste composted from landscapers, and waste self-hauled to disposal and recovery facilities. MSW excludes construction and demolition debris and manufacturing wastes.

**Municipal Solid Waste (MSW) Recovery Rate** — see Percent MSW Recovered,

**Operating and Maintenance (O&M) Costs** — ongoing expenses that include such items as equipment leasing and maintenance, utilities, labor, administrative expenses, licenses, supplies, insurance, residue disposal, marketing fees, contract fees, and publicity programs. In this study, materials recovery O&M costs are broken down into four basic categories: collection, processing and marketing, administration, and education/publicity.

**Participation Rate (%)** — the portion of households served that take part in the curbside collection program for recyclable materials. Refer to the case studies in *In-Depth Studies of Recycling and Composting Programs: Designs, Costs, Results* (Washington, DC: Institute for Local Self-Reliance, 1992), for an explanation of the specific method of calculation.

**Per Ton Costs** — these represent costs on a per ton basis and are calculated by dividing the annual tons recovered *due to the program itself* into annual program costs. For instance, Newark's per ton operating and maintenance collection cost of \$112 is based on the tonnage collected through publicly sponsored recycling activities, not on the total tonnage recovered in the City. Tables specify what costs represent; that is, total operating and maintenance costs, collection costs alone, total gross costs including annualized capital costs, or net costs. Net cost was calculated by subtracting revenues from the gross cost.

**Percent C&D Recovered** — construction and demolition debris recycled and composted divided by the total C&D debris generated (based on tonnages).

**Percent Commercial/Institutional Materials Recovered** — the sum of commercial and institutional materials recycled and composted divided by the total commercial and institutional waste generated (based on tonnages). See definition for Recovery Rate.

**Percent MSW Recycled, Composted, and Recovered** — the portion by weight of municipal solid waste generated that is recycled, composted, and recovered (based on tonnages). See definitions for Recycling Rate, Composting Rate, and Recovery Rate.

**Percent Residential Materials Recovered** — the sum of residential materials recycled and composted divided by the total residential waste generated (based on tonnages). See definition for Recovery Rate.

**Percent Total Waste Recovered** — the sum of MSW and C&D materials recycled and composted divided by the total waste generated (based on tonnages). See definitions for MSW, C&D, and Total Waste.

**Private Sector Waste** — waste collected by private haulers independent of the public sector. This typically includes waste generated by commercial and institutional establishments and large multi-unit households. Where indicated, private sector waste may also include C&D debris. See Appendix C for community-specific information.

**Processing Capital Costs (Composting)** — costs of acquiring equipment used to process-compost, chip, or mulch-organic materials. Processing or composting equipment typically includes shredders or chippers and front-end loaders. If equipment predated the program, its cost was excluded.

**Processing Capital Costs (Recycling)** — costs of acquiring equipment used to process recyclable materials in preparation for marketing to end users. Processing typically includes sorting, contaminant removal, and crushing or baling. If equipment predated the program, its cost was excluded.

**Public Sector Waste** — waste collected by public crews or by private haulers under public contract. This typically includes waste generated by single-family households and small multi-unit buildings. Public sector waste may also include waste generated by small businesses. See Appendix C for community-specific information.

**Recovered Waste** — sum of waste recycled and waste composted.

**Recovery Rate** — the sum of materials recycled and composted divided by the waste generated.

**Recycled Waste** — discarded products and packaging materials recovered for reuse and/or processing into new products. (For two-thirds of the communities documented the tonnage of recycled waste represents materials collected for recycling.)

**Recycling** — recovering discarded products and packaging materials for reuse and/or processing into new products. In this report, recycling does not include composting.

**Recycling Rate** — the tonnage of material collected for recycling—generally including any material rejected during processing—divided by the tonnage of waste generated. (If rejected material is subtracted, recycling rates may drop by 1 to 2 percent for these communities. Approximately one-third of communities were able to provide data on actual tonnages marketed after processing. For these communities, recycling rates

were calculated using marketed tonnages. See Appendix C. No communities reported having to dispose of collected materials, but a few reported needing to store certain recyclables until market conditions improved.)

**Refuse** — waste destined for disposal facilities (incinerators or landfills).

**Reject Rate** — the percentage by weight of recyclables or compostable materials entering a processing or composting facility that is disposed of as residue.

**Residential Waste Recovered, Disposed, and Generated** — the annual tonnage of waste recovered, disposed, and generated from single-family and multi-unit residences and their yards. In some communities, residential waste cannot be separated from commercial/institutional waste. See Appendix C for further clarification.

**Salvage/Reuse** — the repair, refurbishing, washing, or just the simple recovering of discarded products, appliances, furniture, and building materials for use again as originally intended.

**Segregated Collection** — programs in which residents are required to set out food and beverage containers in two or more receptacles.

**Self-hauled Waste** — waste brought to recovery or disposal sites by residents or business/institutional establishments. This waste cannot be divided into residential and commercial/institutional.

**Source Reduction** — waste prevention; that is, avoiding waste generation.

**Source Separation** — segregation of recyclable materials or yard waste from mixed waste on the household or business level to facilitate recycling and composting of these materials.

**Tipping Fees** — the fees charged to haulers for delivering materials at recovery or disposal facilities.

**Total Recovery Rate** — see Percent Total Waste Recovered.

**Total Waste Recovered, Disposed, and Generated** — the sum of MSW and C&D debris recovered, disposed, and generated.

**Year Data Collected** — indicates the base year of study. Data typically pertain to 1990. Where indicated, data may represent 1989 or 1991 program year conditions.